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PATENT

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR(S) : David Neff
TITLE : **BONDED PARTICLE FILTERS**
APPLICATION NO. : 10/659,817
FILED : September 11, 2003
CONFIRMATION NO. : 5262
EXAMINER : Scott R. Kastler
ART UNIT : 1742
LAST OFFICE ACTION : November 3, 2005
ATTORNEY DOCKET NO. : MLCZ 2 00106

**TRANSMITTAL OF
APPEAL BRIEF UNDER 37 C.F.R. § 41.37**

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicants transmit herewith one (1) copy of APPEAL BRIEF UNDER 37 C.F.R. § 41.37 for the above-referenced patent application.

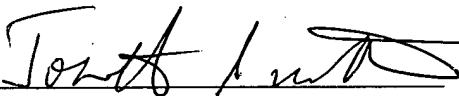
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Applicants hereby petition the Commissioner under 37 C.F.R. § 1.136(a) and request a **one (1) month extension of time** to submit the Appeal Brief Under 37 C.F.R. § 41.37.

Respectfully submitted,

FAY, SHARPE, FAGAN,
MINNICH & MCKEE, LLP

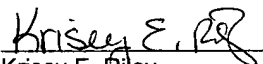
Date: December 15, 2005



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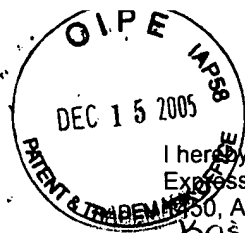
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Date: December 15, 2005

Krisley E. Riley

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This Appeal Brief is being filed with a petition for a request of an extension of time under 37 C.F.R. § 1.136(a). This brief is also accompanied by the \$500 fee set forth in 37 C.F.R. § 41.20(e)(2).

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02 FC:1251 120.00 OP

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i. ***Real party in interest.***

The real party in interest is Pyrotek, Inc. as evidenced by the assignment recorded at Reel/Frame: 016536/0687, recorded on July 19, 2005.

ii. ***Related appeals and interferences.***

There are no related appeals or interferences.

iii. ***Status of the claims.***

Claims 1-5, 11-17, and 19 stand rejected. Each claim is being appealed.

iv. ***Status of amendments.***

For the purposes of appeal the amendments filed November 3, 2005 in the SECOND AMENDMENT AFTER FINAL have been entered by the Examiner.

v. ***Summary of claimed subject matter.***

Claim 1 defines an apparatus 10 (FIGURE 2) for filtering molten metal before entering a dosing tube 2 (FIGURE 1). The apparatus 10 includes a mounting portion 12 (FIGURE 2, page 4 ¶ [0013]). The apparatus 10 also includes a body 16 (FIGURE 2).

The body 16 includes a beveled end 18 (FIGURE 2) opposite the mounting portion 12. A surface 20 attaches to and substantially covers the beveled end 18 (FIGURE 2).

Claim 4 defines an apparatus 10 for filtering molten metal held in a vessel 1 (FIGURE 1) before the metal enters a dosing tube 2 (FIGURE 1). The apparatus includes an attachment portion (¶ [0013], FIGURE 2) dimensioned to attach to the dosing tube 2. The apparatus 10 also includes a closed filtering surface area (see ¶ [0017]) attached to and extending from the attachment portion. The closed filtering surface area includes a cylindrical portion (see FIGURE 2) having a beveled end 18 (FIGURE 2) distal the attachment portion and a planar surface (FIGURE 2) attached to the beveled end.

Claim 13 defines an apparatus for filtering molten metal. The apparatus includes a vessel 1 (FIGURE 1) for holding molten metal, a dosing tube 2 (FIGURE 1) disposed

in the vessel, and a filter 10 (FIGURE 2) attached to the dosing tube, wherein the filter includes a beveled end 18 (FIGURE 2).

vi. Grounds of rejection to be reviewed on appeal.

Whether the Examiner erred in rejecting claims 1-6, 11-17, and 19 under 35 U.S.C. § 103(a) as being unpatentable over Stankiewicz (U.S. Patent No. 4,964,993).

vii. Argument.

1. The Examiner erred when relying on *In re Dailey* and *In re Wood et al.* to reject independent claims 1, 4 and 13 as being unpatentable over Stankiewicz.

Claims 1 and 4 recite an apparatus for filtering molten metal including, among other things, a beveled end. Claim 13 recites a filter including a beveled end. The Examiner rejected each of these independent claims under § 103(a) as being unpatentable over Stankiewicz (U.S. Patent No. 4,964,993).

In the first Office action, the Examiner found that Stankiewicz did not teach a beveled surface. Relying on *In re Dailey*, 149 USPQ 47 (CCPA 1966), however, the Examiner found that absent any demonstrated new or unexpected results arising from the beveled end, motivation to alter the shape of the apparatus taught by Stankiewicz would be obvious to one skilled in the art. See page 3 of Office Action mailed February 2, 2005.

In response to the Office Action mailed February 2, 2005, Appellant argued that one skilled in the art would not modify the filter disclosed in Stankiewicz to include a beveled end. Furthermore, Appellant provided citations to Appellant's specification that supported the significance of the particular configuration of the apparatus in claim 1.

In the final Office Action, the Examiner, relying on *In re Wood et al.*, 199 USPQ 137 (CCPA 1978), found that "[Appellant's] arguments that Stankiewicz does not teach a beveled surface as recited in instant independent claim 1, and that such a beveled surface imparts improved properties to the filter is not persuasive because these improved properties have not yet been presented in proper declaration form." See page 4 of Office Action mailed July 15, 2005.

The Examiner's reliance on *Wood* ("Mere lawyer's arguments and conclusory statements in the specification, unsupported by objective evidence, are insufficient to

establish unexpected results.” 199 USPQ at 140) to reject claim 1, or the other claims that recite a beveled end or beveled surface, is misplaced. In *Dailey*, the CCPA affirmed the Board’s finding that the claim at issue was obvious. With respect to the configuration recited in the claim at issue in *Dailey*, the CCPA held that “[a]ppellants have presented no **argument** which convinces us that the particular configuration of their container is significant or is anything more than one of numerous configurations a person of ordinary skill in the art would find obvious for the purpose of providing mating surfaces in the collapsed container of [the prior art.]” 149 USPQ at 50 (emphasis added). According to *Dailey*, no evidence of the significance of a particular configuration is necessary. Instead, only arguments regarding the significance of the claimed configuration is necessary.

The Examiner’s reliance on *Wood* that Appellant is required to provide evidence of unexpected results – as opposed to arguments regarding the significance of the claimed configuration – seems inappropriate for the apparatus claimed. The unexpected results line of cases, such as *Wood*, concern chemical patent applications – not apparatus patent applications.

2. Appellant has properly overcome the Examiner’s rejection as to independent claims 1, 4 and 13.

Stankiewicz is directed to a multiple-use porous ceramic filter for the filtration of molten metal. Col. 1, lines 9-10. In FIGURE 2, Stankiewicz discloses a holding furnace 35 that includes a holding chamber 37 adjacent to an entry port 39. Included as a portion of the floor 41 of the holding chamber 37, is filter assembly 43. The filter assembly 43 includes a sealing plate 11 and two filter elements 21. Col. 5, lines 18-23. The molten metal flows through the porous ceramic material of the cylindrical elements 21 and preferably through the sealing plate element 11 to be further flowed downstream, ultimately to the associated casting molds. Col. 3, lines 31-35.

The beveled end or beveled surface in claims 1, 4 and 13 is significant for the purpose of providing a large filtering surface area. Generally, the larger the surface area for a filter medium the greater the efficacy of the filter. Furthermore, it is shown in U.S. Patent No. 5,370,171, that dosing tubes, referred to as vacuum tube 6 (see FIGURE 3) in the ‘171 patent, are disposed at an angle other than vertical and that

molten metal vessel bottoms are typically flat. Since dosing tubes are typically disposed at an angle other than vertical and molten metal vessel bottoms are typically flat, to increase the overall surface area of the apparatus in claim 1, Applicant includes a beveled end opposite the mounting portion. By beveling the end, a filter body having a larger overall surface area can be accommodated between the end of the dosing tube and the bottom of the molten metal vessel. Such a modification is nowhere suggested in Stankiewicz

3. The Examiner failed to consider Stankiewicz as a whole when rejecting claims 1, 4 and 13.

A prior art reference must be considered as a whole. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983). Stankiewicz is directed to "a porous ceramic molten metal filter in the form of one or more porous ceramic, close-ended, cylindrical filter body elements connected to an essentially horizontal porous ceramic sealing plate filter element and extending vertically above the elevation of that sealing plate." Col. 3, lines 16-22. In the Stankiewicz filter assembly, "the metal oxides and both the filter cake impurities and the inclusions trapped adjacent to, but just beneath the exterior surface area, of the vertical closed-end cylindrical filter elements of the assembly, fall away and settle by gravity to the horizontal sealing plate element where they are again captured." Col. 3, lines 41-46. Accordingly, the fact that the cylindrical filter elements are vertical is critical to the principle of operation of the filter assembly disclosed in Stankiewicz. When considering Stankiewicz as a whole, one of ordinary skill in the art would not provide a beveled end to one of the filter elements, since this would reduce the vertical dimension of the filter element.

4. Modifying Stankiewicz to include a beveled end would change the principle of operation of the filter assembly disclosed in Stankiewicz.

If the proposed modification of the reference would change the principle of operation of the reference, then the teachings of the reference is not sufficient to render the claims obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). As discussed above, providing a beveled end to the filter element of Stankiewicz would reduce the vertical dimension of the filter element. Such a reduction would inhibit the

surface cleaning capability of the filter element disclosed in Stankiewicz. Furthermore, providing a beveled end may contribute to "cake filtration" as opposed to "depth filtration," which is desired by Stankiewicz. See col. 3, lines 54-68. For the reasons discussed above, independent claims 1, 4 and 13 are patentable over Stankiewicz.

5. Stankiewicz fails to teach or suggest each claim limitation recited in claims 2 and 4.

The reference or combination of references cited by the Examiner must teach or suggest all claim limitations. See MPEP § 2143. Claims 2 and 4 recite, among other things, an apparatus for filtering molten metal material comprising an attachment portion dimensioned to attach to or fit around a dosing tube. In rejecting claim 4, the Examiner argued that Stankiewicz discloses a filter element that can be dimensioned to fit around a dosing tube through its annular portion. See Office Action mailed June 15, 2005 at page 2. The filter element disclosed in Stankiewicz mounts to a sealing plate – it is not suggested that it is dimensioned to fit around or mount to a dosing tube. Furthermore, the filter assembly disclosed in each embodiment in Stankiewicz is positioned well upstream from where a dosing tube would be introduced into the holding chamber 37. In FIGURE 2 of Stankiewicz, for example, a dosing tube would be introduced on the right side of the chamber downstream from the filter assembly 43. Accordingly, Stankiewicz fails to teach or suggest each claim limitation of either claim 2 or claim 4.

6. Stankiewicz fails to teach or suggest each claim limitation recited in claim 13.

Claim 13 recites a vessel, a dosing tube disposed in the vessel, and a filter attached to the dosing tube. Stankiewicz fails to teach or suggest a dosing tube or a filter attached to the dosing tube. Furthermore, the filter assembly disclosed in Stankiewicz is well upstream from where a dosing tube would be introduced. Accordingly, one of ordinary skill in the art would not be motivated to modify the filter element disclosed in Stankiewicz such that it is attached to a filter dosing tube.

viii. Claims appendix.

1. (Previously Presented) An apparatus for filtering molten metal before entering a dosing tube, the apparatus comprising a mounting portion; a filter body connected to the mounting portion, the filter body having a beveled end opposite the mounting portion; and a surface attached to and substantially covering the beveled end.
2. (Previously Presented) The apparatus of claim 1 wherein the mounting portion is dimensioned to fit around the dosing tube.
3. (Original) The apparatus of claim 1 wherein the filter body is substantially cylindrical.
4. (Previously Presented) An apparatus for filtering molten metal held in a vessel before the metal enters a dosing tube, the apparatus comprising:
an attachment portion dimensioned to attach to a dosing tube; and
a closed filtering surface area attached to and extending from the attachment portion to provide a filtering surface, the closed filtering surface area comprises a cylindrical portion having a beveled end distal the attachment portion and a planar surface attached to the beveled end.
5. (Original) The apparatus of claim 4 wherein the attachment portion is annular.
- 6-10. (Cancelled).
11. (Previously Presented) The apparatus of claim 1 wherein the surface attached to and substantially covering the beveled end is substantially planar.
12. (Previously Presented) The apparatus of claim 1 wherein the filter body comprises:
silicon carbide or aluminum oxide; and
an aluminum-alloy resistant binder.

13. (Currently Amended) An apparatus for filtering molten metal, the apparatus comprising:

- a vessel for holding molten metal;
- a dosing tube disposed in the vessel; and
- a filter attached to the dosing tube, wherein the filter includes a beveled

end.

14. (Previously Presented) The apparatus of claim 13 wherein the filter is mounted onto an inlet end of the dosing tube.

15. (Previously Presented) The apparatus of claim 13 wherein the filter is cemented to the dosing tube.

16. (Previously Presented) The apparatus of claim 13 wherein the filter rests on a bottom floor of the vessel.

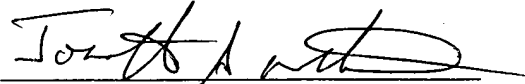
17. (Currently Amended) The apparatus of claim 16 wherein the beveled end rests on the bottom floor of the vessel.

18. (Cancelled)

19. (Previously Presented) The apparatus of claim 13 wherein the dosing tube is disposed at an angle to vertical.

In view of the above, Appellant respectfully submits that claims 1-5, 11-17, and 19 are in condition for allowance. Therefore, Appellant requests that the Board of Patent Appeals and Interferences reverse each rejection made by the Examiner.

Respectfully submitted,



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Filed: December 15, 2005

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